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ABSTRACT

The study was designed to explore further, and possibly extend, a conceptual model of teacher-student classroom interaction used initially in mono-lingual, segregated, public secondary school and college settings. The 4 verbal act modes in the model were called appraisal, prescriptive, informational, and questioning. This observational study attempted to test verbal interaction relationships at the bilingual elementary school level in classrooms of varying racial/ethnic composition, intelligence, and achievement. The sample consisted of 36 audio-taped classroom lessons recorded during a 10 day observation period. Four lessons from each of the 9 elementary (K, 1-3) bilingual classrooms in the program were selected. The racial/ethnic composition of the classrooms ranged from 35-68% Mexican American, 3-52% black, and 4-55% white. A total of 2,010 classroom interactions were observed, recorded, and analyzed. Results showed that teacher expectation were related significantly. The Metropolitan Readiness Test and Otis-Lennon Mental Ability Test scores were not correlated significantly with pupil verbal performance in these bilingual classrooms. Prescriptive standards were related specifically to the initiated acts of male pupils and the positive self-referenced acts of female pupils in the high Mexican American classrooms. It was also suggested that considerable teacher attention, interaction, and emphasis on prescriptive control was directed at Mexican American pupils. (FF)

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Teacher-Pupil Interaction in Bilingual Elementary School Classrooms

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Southwestern Social Science Association meetings,
March 28, 1974, Dallas, Texas

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The present study was designed to explore further, and possibly extend, a conceptual model of teacher-student classroom interaction (Johnson, 1973) used initially in monolingual, segregated, public secondary school and college (Johnson, 1974) settings. In the initial studies it was assumed that teachers acquire expectations regarding the occupants of school system positions (principal, teacher, student) as well as for the behavioral performances of persons holding these positions. Further, it was assumed that teacher expectations are enunciated within a set of four, mutually exclusive verbal act modes. A verbal act mode is the speaker's way of expressing some dimension of the characteristics of persons (especially their behavior), objects, places, and events in verbal interaction. The four verbal act modes in the model are called appraisal, prescriptive, informational, and questioning, and these modes seem to vary in teacher-student interaction on the dimensions (See Figure 1.) of conclusiveness, applicability, certitude, and scope respectively. Verbal interaction may be viewed then as a process that occurs between at least two people when the way an antecedent verbal act is emitted by one speaker affects the subsequent verbal behavior of another speaker.

In the previous studies the four expectational modalities were found to be related, according to the model, differentially and significantly to the quality and quantity of student classroom behavior. The present observational study attempted to replicate these verbal interaction relationships at the bilingual elementary school level in classrooms of varying racial/ethnic composition, intelligence, and achievement.

Despite Rosenthal and Jacobson (1968) and associates' strong suggestion that teacher expectations regarding pupil performance are somehow communicated to pupils in the naturalistic classroom setting during the course of a school year, few studies outside of the laboratory have focused on the sequential effects of verbalized teacher expectations on pupil verbal performance. In addition, Seaver (1973) reported recently some methodological shortcomings and five different investigative failures to replicate the original Rosenthal and Jacobson findings using similar procedures. He concluded that the manipulations of teacher expectation have been too artificial, implausible, psychologically confounding, and any effects produced have been transitory because of the relative weakness of the manipulations. Also, it may be that the apparent "weaknesses" of these manipulations are due, in part, to an over generalized conception of a teacher expectation (c.f. Meichenbaum and Bowers, 1969 for a similar point), its operational distance from classroom interaction, and its presumed persistent, long-range effects on pupil performance.

The model used in this study focuses on the immediate, directly

observable effects of four expectational modes of teacher behavior on subsequent pupil verbal performance. The appraisal mode represents the teacher's value expectation in the form of a verbalized judgment about something liked or disliked. The prescriptive mode expresses the teacher's control expectation in the form of a general standard or more immediate situational demand. The informational mode is the teacher's way of indicating her certainty or uncertainty of belief about something. The questioning mode is the teacher's way of asking for some narrow or broad range of response from pupils.

Traditionally, teacher expectational "effects" have involved pre and post comparisons of pupil intelligence and achievement scores rather than behavioral indicators of pupil verbal performance. This trend has continued despite the many arguments against an over-reliance upon or exclusive use of standard I.Q. and achievement measures. These arguments have been most emphatic (c.f. Clark, 1963) about rigid teacher expectations hindering, if not preventing, the recognition of a broader range of abilities, skills, and creativity in minority pupils.

For purposes of this study, creativity is defined as an unexpected, positive self-referenced or productive verbal act emitted spontaneously by a pupil. An unexpected pupil verbal act is bounded usually by some form and history of communication and is embedded within the role relationships and opportunities to be found in a given sequence of interaction (e.g., during a class

lesson). Creativity may be expressed when a pupil is able to explicitly claim responsibility for or reference himself in connection with the enunciation of unexpected content. Creativity may be expressed through verbal productivity, i.e., the pupil's elaboration, hypothetical construction, or divergent interpretation of unexpected content.

Within this framework creativity as a process may be examined in relation to defined sequential units of interaction, i.e., between specific antecedent teacher expectational modes and subsequent pupil verbal acts. The creative product may be judged by the quality and quantity of verbal content expressed by a pupil within a defined unit called an "interact." An interact is a verbal act emitted by the teacher that is followed by at least one verbal act emitted spontaneously by a pupil in the classroom. In addition to looking at the interact relationships suggested by this model (Figure 1.), the possible effects of pupil expectation, race, sex, intelligence, achievement, and the racial/ethnic composition of the classroom on pupil performance were examined.

Methodology

The study was conducted as part of an overall evaluation of the bilingual elementary school project by the Waco Independent School District (WISD), Waco, Texas.

Sample. The sample consisted of 36 audio-taped classroom lessons (mean time 30.8 minutes) recorded during a ten day period of

observation. Four lessons from each of the nine elementary (K, 1-3) bilingual classrooms in the program were selected, but one untranslated lesson (predominantly in Spanish) had to be omitted. The racial/ethnic composition of the classrooms ranged from 35-68% Mexican-American, 3-52% black, and 4-55% white. A total of 2010 classroom interactions were observed, recorded, and analyzed.

Procedure. In October, 1973 all kindergarten and first grade pupils in the bilingual classrooms were given the Metropolitan Readiness Test, and the second and third graders were given the Otis-Lennon Mental Ability Test. Subsequently, a conference was held with all teachers and aids in order to assure their cooperation, describe the procedures to be used, and answer any questions they might have about the study. The teachers provided lesson schedules, pupil rosters, and seating charts needed by each classroom observer to identify speakers and speaker targets. No changes in classroom lesson or daily procedure were made by the teachers. All teacher-pupil interaction observed during the course of a complete lesson was recorded on 90 minute tape with a Roberts 81 deluxe cassette tape recorder. These recorders were available already in the classrooms, and were often used by the teachers.

One observor monitored each classroom. Each one noted the physical condition and composition of the classroom, and coded sequentially all classroom speakers, speaker targets, and shifts in classroom activity. A typed transcription was prepared then from the audio recordings and observor codings for each lesson. Each

verbal interaction was identified as interact units, and coded according to the rules, systematic procedures, and expectational categories detailed in the Social Interaction Creativity Communication System (SICCS) manual.[1] Classroom interactions involving teacher and aid verbal acts were coded independently by two assistants into the expectational mode categories. Classroom interactions with pupil verbal acts were coded independently by a third coder into the initiated, positive self-referenced, productive, length, and number of act categories. The SICCS categories have been coded with reliability in other studies. For this study the mean percentages of inter-coder agreement were respectively for speaker sex (98.3), speaker race (97.7), target sex (96.8), target race (97.5), and the appraisal (89.1), prescriptive (91.7), informational (95.4), and questioning (96.5) modes.

Analyses consisted of cross-tabulating all of the teacher expectational modes with the subsequent pupil verbal act variables. These interact relationships were then re-examined against the controls of pupil sex, race, and dominant racial/ethnic composition of the classroom. Also, the predicted teacher-pupil interact relationships were compared with pupil-pupil interactions. Finally Kendall tau rank correlations between individual pupil's within-classroom ranks on either intelligence or achievement and their ranks on each of the interaction variables were computed.

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[1]A limited number of pre-publication research editions of the SICCS coding manual are available from the writer.

Results

A total of 1313 or 65.3 percent of all classroom interactions consisted of an antecedent teacher verbal act being followed by only one pupil verbal act. Teacher positive rather than negative appraisals, as predicted, were related significantly ($p < .05$) to longer verbal acts (Table 1), but not pupil-initiated, productive, positive self-referenced activity, or the number of succeeding verbal acts. These results tend to support the earlier findings.

Teacher prescriptives were not related significantly to one act pupil productivity and length, or the number of succeeding verbal acts. Teacher standards rather than directions (Table 2) were associated significantly ($p < .001$) with pupil-initiated activity and positive self-referenced verbal activity (Table 3). These two findings appear to reverse the predicted pattern for earlier findings.

Teacher informationals were not related significantly to positive self-referenced pupil acts and the number of succeeding verbal acts. Uncertain rather than certain informational acts (Table 4) were associated significantly ($p < .01$) with pupil-initiated activity and productivity (Table 5). Also, uncertain informational acts were associated (Table 6) significantly ($p < .05$) in interactions with longer pupil acts as predicted.

Teacher questioning acts were not related significantly to pupil-initiated acts. Broad rather than narrow questioning was associated significantly ($p < .001$) with pupil productivity (Table 7) and act length (Table 8), and significantly ($p < .05$) with positive

self-referenced acts (Table 9) and number of succeeding verbal acts (Table 10) as predicted.

In 139 interactions or only 6.9 percent of all classroom interactions studied were teacher verbal acts followed by more than one pupil verbal act. No reversals or change in the pattern of interact relationships was noted here except that teacher prescriptive standards rather than directions were not related to pupil-initiated and positive self-referenced acts in extended interactions.

The stability of these teacher-pupil relationships was sustained when re-examined against the control of the pupil's racial/ethnic identity. However, teacher prescriptive standards rather than directions were related significantly ($p < .01$) to single pupil-initiated (Table 11) and positive self-referenced verbal acts (Table 12) when emitted by Mexican-American pupils. In fact, Mexican-American pupils (who represent 51.6% of the pupils sampled, n=116) were specifically targeted more frequently (Table 13) by teachers than either black or white pupils, and, inturn, Mexican-American pupils responded more frequently (Table 14) than black or white pupils to each teacher expectational mode.

Although male pupils represented 49.3 percent (n=111) of the total sample, teachers specifically targeted male pupils (Table 15) more often than female pupils or the entire classroom, and, inturn, male pupils responded twice as frequently as female pupils (Table 16) to each teacher expectational mode. However, the stability of the reported teacher-pupil findings was sustained when re-examined

against the control of pupil sex with no reversals noted.

A total of 243 or only 14.7 percent of the classroom interactions studied consisted of an antecedent pupil verbal act followed by one verbal act from another pupil. In order to assess the relative strength and generality of the mode-interact relationships, teacher-pupil interactions were compared with pupil-pupil interactions. The results indicated that neither pupil appraisals (n=34), prescriptives (n=31), informationals (n=149), or questions (n=29) were cross-tabulated significantly with the performance variables in the first subsequent pupil act (only five pupil-pupil interactions included more than one succeeding verbal act).

The individual pupil's classroom rank on either the Metropolitan Readiness Test total score or the Otis-Lennon Mental Ability Test scores was correlated with the pupil's classroom rank on the pupil-initiated, positive self-referenced, productivity, length, and number of verbal act variables. In no case was a significant rank correlation found with a pupil verbal performance variable in classroom interaction.

Finally, each teacher-pupil interact relationship was re-examined against the control of predominant racial/ethnic composition by partitioning the nine bilingual classrooms into high Mexican-American (3 classrooms with highest proportions of Mexican-Americans $\bar{X}$ 65%), high black (3 classrooms with highest proportions of blacks $\bar{X}$ 43%), and high white (3 classrooms with highest proportions of whites $\bar{X}$ 38%). The results indicated that teacher negative rather than positive appraisals were related to pupil-initiated activity

(Table 17) significantly ($p < .05$) in reverse of the predicted pattern only in the high Mexican-American classrooms. Teacher prescriptive standards rather than directions were related to pupil-initiated activity (Table 18) significantly ($p < .05$) and in reverse of the pattern predicted only in the high Mexican-American classrooms. With the exception of these later two unexpected findings, the initial teacher-pupil relationships reported remained stable across classrooms of varying racial/ethnic composition.

Summary

In accordance with the conceptual model (Figure 1), teacher informational and questioning modes rather than value and control modes of teacher expectation were related significantly and more consistently with the creative quality and quantity of pupil verbal performance in the bilingual classroom. The Metropolitan Readiness Test and Otis-Lennon Mental Ability Test scores were not correlated significantly with pupil verbal performance in these bilingual classrooms. Also, the mode alternatives assumed in the model to be influenced more by substantive concerns rather than the value and control expectations of the teacher received, with the exception of prescriptiveness, some support.

Teacher prescriptions were implicated in almost as many teacher-pupil interactions (n=404, 30.8%) as questions (n=531, 40.4%), and teacher prescriptions were observed more frequently (n=48, 34.5%) than any other expectational mode in extended interactions. Teacher

standards rather than directions were related significantly only to the first, but not the extended, positive self-referenced and initiated acts of Mexican-American pupils. Prescriptive standards were related specifically to the initiated acts of male pupils and the positive self-referenced acts of female pupils in the high Mexican-American classrooms.

Speculation regarding these findings suggests that considerable teacher attention, interaction, and emphasis on prescriptive control was directed at Mexican-American pupils. Since seven of nine female teachers were white (no Mexican-Americans) and eight of the nine female teacher aids were Mexican-American (no whites), teacher verbalized standards may have lacked sufficient cultural sex role legitimacy or saliency relative to peer directives to sufficiently induce male Mexican-American pupils to comply verbally. Conversely, all female teachers and Mexican-American female aids working together in predominantly Mexican-American classrooms may have induced more compliance and some initial self-identification in female Mexican-American pupils without facilitating the productivity and quantity of their over-all verbal performance.

The predicted findings support the conception of an underlying expectational continuum in teacher-pupil interaction mediating pupil verbal performance.

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FIGURE 1

A Conceptual Model of Teacher-Pupil Classroom Interaction

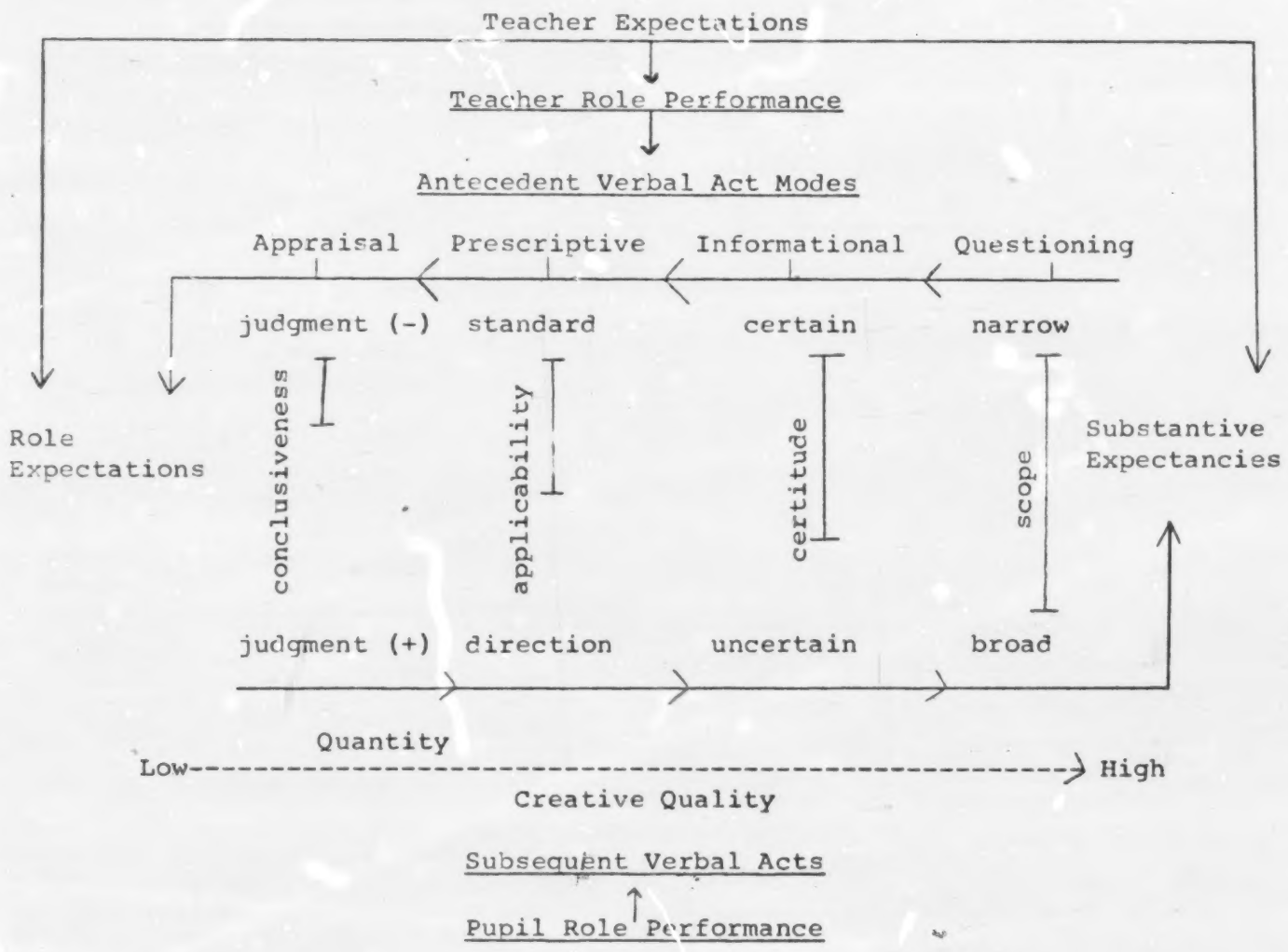

TABLE 1

Antecedent Teacher Appraisal Mode
By Subsequent Pupil Verbal Act Length

	Length [a]					
	One		Two or more		Total	
Appraisal Mode	f	%	f	%	f	%
Positive judgment	46	(45.5)	55	(54.5)	101	(100.0)
Negative judgment	25	(64.1)	14	(35.9)	39	(100.0)
Total	71	(50.7)	69	(43.3)	140	(100.0)

$X^2 = 3.2$ ($p < .05$) df=1

[a] Length of verbal act is expressed as a proportion of a standard line. A standard line is any combination of 60 orthographic symbols and spaces typed on a standard elite typewriter. Length one represents codings within the first quartile range (1-14) of a standard line, and two or more indicates codings beyond the first quartile range.

TABLE 2

Antecedent Teacher Prescriptive Mode By Subsequent Pupil-Initiated Verbal Activity

	Pupil-Initiated Activity					
	Compliance		Initiated[a]		Total	
Prescriptive Mode	f	%	f	%	f	%
Direction	180	(50.1)	179	(49.9)	359	(100.0)
Standard	10	(22.2)	35	(77.8)	45	(100.0)
Total	190	(47.0)	214	(53.0)	404	(100.0)

$X^2=11.2$ ($p<.001$) df=1

[a]Initiated represents verbal acts of interruption, redirection, and volunteering that are emitted by pupils not targeted specifically by the teacher.

TABLE 3

Antecedent Teacher Prescriptive Mode By Subsequent Self-Referenced Pupil Verbal Activity

	Self-Referenced Verbal Activity					
	Positive		Nonpositive		Total	
Prescriptive	f	%	f	%	f	%
Direction	39	(10.9)	320	(89.1)	359	(100.0)
Standard	14	(31.1)	31	(68.9)	45	(100.0)
Total	53	(13.1)	351	(86.9)	404	(100.0)

$X^2=12.7$ ($p<.001$) df=1

TABLE 4

Antecedent Teacher Informational Mode By Subsequent Pupil-Initiated Verbal Activity

	Pupil-Initiated Activity					
	Compliance		Initiated[a]		Total	
Informational Mode	f	%	f	%	f	%
Certain	42	(24.7)	128	(75.3)	170	(100.0)
Uncertain	6	(8.8)	62	(91.2)	68	(100.0)
Total	48	(20.2)	190	(79.8)	238	(100.0)

$X^2=6.7$ ($p < .01$) df=1

[a]Initiated represents verbal acts of interruption, redirection, and volunteering that are emitted by pupils not targeted specifically by the teacher.

TABLE 5

Antecedent Teacher Informational Mode By Subsequent Productive Pupil Verbal Activity

	Pupil Verbal Activity					
	Productive		Nonproductive		Total	
Informational Mode	f	%	f	%	f	%
Certain	14	(8.2)	156	(91.8)	170	(100.0)
Uncertain	15	(22.1)	53	(77.9)	68	(100.0)
Total	29	(12.2)	209	(87.8)	238	(100.0)

$X^2=7.4$ ($p < .01$) df=1

TABLE 6

Antecedent Teacher Informational Mode By Subsequent Pupil Verbal Act Length

	Length[a]					
	One		Two or more		Total	
Informational Mode	f	%	f	%	f	%
Certain	85	(50.0)	85	(50.0)	170	(100.0)
Uncertain	24	(35.3)	44	(64.7)	68	(100.0)
Total	109	(45.8)	129	(54.2)	238	(100.0)

$X^2=3.7$ ($p<.05$) df=1

[a]Length of verbal act is expressed as a proportion of a standard line. A standard line is any combination of 60 orthographic symbols and spaces typed on a standard elite typewriter. Length one represents codings within the first quartile range (1-14) of a standard line, and two or more indicates codings beyond the first quartile range.

TABLE 7

Antecedent Teacher Questioning Mode By Subsequent Productive Pupil Verbal Activity

	Pupil Verbal Activity					
	Productive		Nonproductive		Total	
Questioning Mode	f	%	f	%	f	%
Narrow	14	(3.3)	410	(96.7)	424	(100.0)
Broad	30	(28.0)	77	(72.0)	107	(100.0)
Total	44	(8.3)	487	(91.7)	531	(100.0)

$X^2=65.6$ ($p < .001$) df=1

TABLE 8

Antecedent Teacher Questioning Mode By Subsequent Pupil Verbal Act Length

	Length[a]					
	One		Two or more		Total	
Questioning Mode						
Narrow	285	(67.2)	139	(32.8)	424	(100.0)
Broad	37	(34.6)	70	(65.4)	531	(100.0)
Total	322	(60.6)	209	(39.4)	531	(100.0)

$X^2=38.3$ ($p<.001$) df=1

[a]Length of verbal act is expressed as a proportion of a standard line. A standard line is any combination of 60 orthographic symbols and spaces typed on a standard elite typewriter. Length one represents codings within the first quartile range (1-14) of a standard line, and two or more indicates codings beyond the first quartile range.

TABLE 9

Antecedent Teacher Questioning Mode By Subsequent Self-Referenced Pupil Verbal Activity

	Self-Referenced Verbal Activity					
	Positive		Nonpositive		Total	
Questioning Mode	f	%	f	%	f	%
Narrow	44	(10.4)	380	(89.6)	424	(100.0)
Broad	18	(16.8)	89	(83.2)	107	(100.0)
Total	62	(11.7)	469	(88.3)	531	(100.0)

$X^2=2.9$ ($p<.05$) df=1

TABLE 10

Antecedent Teacher Questioning Mode By Number of Succeeding Pupil Verbal Acts

	Number of Succeeding Acts					
	One		Two or more		Total	
Questioning Mode	f	%	f	%	f	%
Narrow	421	(93.1)	31	(6.9)	452	(100.0)
Broad	105	(86.8)	16	(13.2)	121	(100.0)
Total	526	(91.8)	47	(8.2)	573	(100.0)

$X^2=4.1$ ($p < .05$) df=1

TABLE 11

Antecedent Teacher Prescriptive Mode By Subsequent Mexican-American Pupil-Initiated Verbal Activity

	Pupil-Initiated Activity					
	Compliance		Initiated[a]		Total	
Prescriptive Mode	f	%	f	%	f	%
Direction	91	(56.5)	70	(43.5)	161	(100.0)
Standard	5	(21.7)	18	(78.3)	23	(100.0)
Total	96	(52.2)	88	(47.8)	184	(100.0)

$X^2=8.2$ ($p < .01$) df=1

[a] Initiated represents verbal acts of interruption, redirection, and volunteering that are emitted by pupils not targeted specifically by the teacher.

TABLE 12

Antecedent Teacher Prescriptive Mode By Subsequent Self-Referenced Mexican-American Pupil Verbal Activity

	Self-Referenced Verbal Activity					
	Positive		Nonpositive		Total	
Prescriptive	f	%	f	%	f	%
Direction	8	(5.0)	153	(95.0)	161	(100.0)
Standard	5	(21.7)	18	(78.3)	23	(100.0)
Total	13	(7.1)	171	(92.9)	184	(100.0)

$X^2=6.4$ ($p<.01$) df=1

TABLE 13

Number of Antecedent Teacher Verbal Acts
By Target Pupil Racial/Ethnic Identification

	Target Pupils									
	Classroom		Brown		Black		White		Total	
	f	%	f	%	f	%	f	%	f	%
Antecedent Teacher Acts	432	(32.9)	422	(32.1)	204	(15.6)	255	(19.4)	1313	(100.0)

TABLE 14

Antecedent Teacher Expectational Mode By Pupil Racial/Ethnic Identification and Frequency of Pupil Verbal Acts

	Racial/Ethnic Identity							
	Brown		Black		White		Total	
Expectational Mode	f	%	f	%	f	%	f	%
Appraisal	61	(43.6)	32	(22.8)	47	(33.6)	140	(100.0)
Prescriptive	179	(44.3)	99	(24.5)	126	(31.2)	404	(100.0)
Informational	129	(54.2)	46	(19.3)	63	(26.5)	238	(100.0)
Questioning	248	(46.7)	119	(22.4)	164	(30.9)	531	(100.0)
Total	617	(47.0)	296	(22.5)	400	(30.5)	1313	(100.0)

TABLE 15

Number of Antecedent Teacher Verbal Acts By Target Pupil Sex

	Target Pupils			
	Classroom	Male	Female	Total
Antecedent Teacher Acts	f % 432 (32.9)	f % 539 (41.0)	f % 432 (26.1)	f % 1313 (100.0)

TABLE 16

Teacher Expectational Mode By
Subsequent Pupil Speaker Sex

	Sex					
	Male		Female		Total	
Expectational Mode	f	%	f	%	f	%
Appraisal	95	(67.9)	45	(32.1)	140	(100.0)
Prescriptive	262	(64.9)	142	(35.1)	404	(100.0)
Informational	153	(68.4)	85	(31.6)	238	(100.0)
Questioning	356	(67.0)	175	(33.0)	531	(100.0)
Total	866	(66.0)	447	(33.0)	1,313	(100.0)

TABLE 17

Antecedent Teacher Appraisal Mode By Subsequent Pupil-Initiated Verbal Activity in High Mexican-American Classrooms

	Pupil-Initiated Activity					
	Compliance		Initiated[a]		Total	
Appraisal Mode	f	%	f	%	f	%
Positive judgment	23	(43.4)	30	(56.6)	53	(100.0)
Negative judgment	4	(18.2)	18	(81.8)	22	(100.0)
Total	27	(36.0)	48	(64.0)	75	(100.0)

$X^2=4.3$ $(p < .05)$ df=1

[a]Initiated represents verbal acts of interruption, redirection, and volunteering that are emitted by pupils not targeted specifically by the teacher.

TABLE 18

Antecedent Teacher Prescriptive Mode By Subsequent Pupil-Initiated Verbal Activity in High Mexican-American Classrooms

	Pupil-Initiated Activity					
	Compliance		Initiated[a]		Total	
Prescriptive Mode	f	%	f	%	f	%
Direction	85	(49.1)	88	(50.9)	173	(100.0)
Standard	5	(26.3)	14	(73.7)	19	(100.0)
Total	90	(46.9)	102	(53.1)	192	(100.0)

$X^2=3.6$ ($p < .05$) df=1

[a]Initiated represents verbal acts of interruption, redirection, and volunteering that are emitted by pupils not targeted specifically by the teacher.